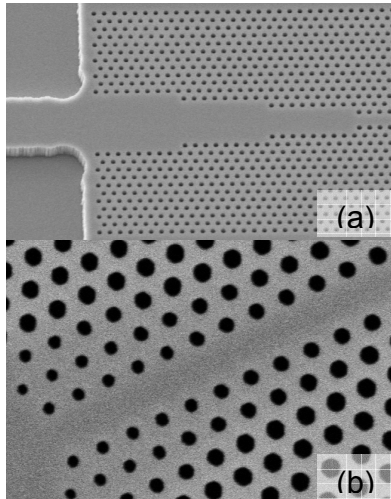


## Comparison of Different PhC Waveguide Couplers in InGaAsP/InP

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*Fig. 1: SEM photograph of fabricated PhC Couplers*

For small footprint integrated optics low loss coupling between ridge waveguides and Photonic Crystal (PhC) waveguides is essential. We fabricated and analyzed different PhC coupler geometries (examples in fig. 1) in a triangular PhC lattice (CAIBE etched [2]). Different coupler layouts such as step type (shown in fig. 1a), line-gradient type (as proposed by [1]), continuous type and field-gradient type (shown in fig. 1b) were compared in measurement and calculation. We measured the transmission around 1.5  $\mu\text{m}$  wavelength and found a typical improvement of 3 dB per tapered interface compared to reference structures without tapers. Best results were achieved at ultra compact taper lengths < 5  $\mu\text{m}$ . Good agreement between the end-fire measurements and the 2D finite element simulations could be observed.

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